

## **In The Claims:**

Please rewrite claim 8 as follows:

(a marked up version showing changes appears in Appendix A)

8. (amended) A magnetic head actuator having a finely movable tracking device comprising:

a swing arm having a magnetic head at a free end and reciprocally movable around a coarse rotation axis at a base of a base of the swing arm;

a piezoelectric element suspended between two sections of the swing arm by an adhesive, the piezoelectric element having a voltage-impressing electrode for allowing a fine arcuate movement of the free end around the coarse rotation axis when a voltage is applied; and

an FPC board having a resin base and a feeding line embedded in the resin base for feeding power to the voltage-impressing electrode,

wherein the feeding line resides completely within the FPC board except for an exposed portion extending onto the voltage impressing electrode, and wherein the exposed portion is bonded to the piezoelectric element by a direct electrical connection between the voltage-impressing electrode and the exposed portion.

## **REMARKS**

Claims 1-14 are pending in the application. Claim 8 has been amended. No new matter has been introduced by the amendment.

The applicants assert that the claimed adhesively suspended piezoelectric element enables a direct electrical connection to be made to the piezoelectric element without compromising the ability of the piezoelectric element to cause a fine arcuate movement of the magnetic head. (See FIG. 3 and applicants' specification, page 8, ll. 3-22). Accordingly, a magnetic head actuator having improved mechanical action and

electrical interconnection is achieved. These advantages are not suggested or disclosed by the cited references, alone or in combination.

### **Rejection Under 35 U.S.C. § 102(e)**

Claims 8 and 14 have been rejected over Wada et al. This rejection is believed overcome in view of the following remarks.

Claim 8, as amended, requires that an exposed portion of the feeding line is bonded to an adhesively suspended piezoelectric element by a direct electrical connection between the voltage-impressing electrode and the exposed portion. The applicants disclose examples of different bonding structures in FIGs. 8-20 of their drawing and in the associated text in their specification. In these structures, the feeding line is bonded (or adhered firmly) to the electrode of the piezoelectric element by physical structures that form an electrical connection (a physical joint). Accordingly, claim 8 recites a bonding structure in which a physical bond is provided in the form of an electrical connection.

The applicants respectfully assert that anticipation requires that a single reference disclose each and every element of the claim at issue. As asserted in the applicants' previous response, filed July 24, 2002, Wada et al. disclose the attachment of the second conductor member (18(b)) to actuator connection pads (22), which are, in turn, connected to the terminal electrodes of the actuator (11). Further, Wada et al. do not specify a means by which the second conductor member is connected connection pads. Accordingly, Wada et al. do not suggest or disclosed the claimed bond formed by a direct electrical connection.

Claim 14 depends from claim 8 and adds that a trace line leads to the magnetic head and extends with the feeding line in the FPC. Since Wada et al. do not suggest or disclose all of the elements of claim 8, claim 14 cannot be anticipated by Wada et al.

## **Rejection Under 35 U.S.C. § 103(a)**

Claims 1, 6-7, and 13 have been rejected over Wada et al. in view of Budde et al. Claim 1 recites a magnetic head actuator having a piezoelectric element suspended between two sections of the swing arm by an adhesive. Claims 6 and 7 each depend from claim 1 and add further limitations to claim 1. The Applicants respectfully assert that neither Wada et al. nor Budde et al. suggest or disclose a direct electrical connection between a feeding line and a voltage-impressing electrode of an adhesively suspended piezoelectric element. Accordingly, the Applicants respectfully assert that claims 1 and 6-7 distinguish over the combination of cited references.

The applicants respectfully disagree with the assertion in the instant Office Action that "Budde discloses a piezoelectric element suspended between two sections of the swing arm by an adhesive." (Office Action, pg. 4). The structure disclosed by Budde et al. differs from the claimed "suspension between two sections of the swing arm" at least because, in Budde et al. the piezoelectric elements are mounted to horizontal surfaces of the swing arm and are attached to more than two sections of the swing arm. Budde et al. describe that the piezoelectric elements (32a) and (32b) are attached to mounting arms (52a and 52b) and to the base (38).

The piezoelectric elements 32a, 32b are mounted using adhesive to the base 38 at one end and to the mounting arms 54a, 54b, respectively, of the head suspension 46 at the other end. Only a small portion of each end of the piezoelectric elements 32a, 32b is attached to the base 38 and the head suspension 46. The remainder of the lengths of the piezoelectric elements 32a, 32b remains unattached. (Col. 4, ll. 3-9).

As shown in FIG. 4, the elements (32a) and (32b) are not suspended by an adhesive as asserted in the Office Action, they are instead, overlying horizontal surfaces and are mounted to the horizontal surfaces. Further, as also shown by Budde et al. in FIG. 4, the piezoelectric elements also overlie a longitudinal micro-actuation beam (40). Accordingly, not only do Budde et al. disclose piezoelectric elements mounted to several horizontally disposed sections of a swing arm, rather than being suspended between two sections by an adhesive, they also disclose piezoelectric elements

disposed over an underlying structure. An underlying structure appears in all embodiments disclosed by Budde et al.

Wada et al. does not overcome the deficiency of Budde et al. As acknowledged in the instant Office Action, "Wada et al. fails to disclose that the piezoelectric element is suspended between two sections of the swing arm by an adhesive." (Office Action, pg. 4). Accordingly, neither Wada et al. nor Budde et al. suggest or disclose a direct electrical connection between a feeding line and a voltage-impressing electrode of an adhesively suspended piezoelectric element.

Claim 3 has also been rejected over Wada et al. in view of Budde et al. Claim 3 adds the further limitation that the direct electrical connection be formed by an Au ball bond. Since neither Wada et al. nor Budde et al. suggest or disclose all of the elements of claim 1, claim 3 cannot be obvious in view of the cited combination of references.

Claim 7 depends from claim 1 and adds the further limitation that a trace line lead to the magnetic head and extend with the feeding line in the FPC. Since neither Wada et al. nor Budde et al. suggest or disclose all of the elements of claim 1, claim 7 cannot be obvious in view of the cited combination of references.

Claim 13 is believed to distinguish over Wada et al. and Budde et al. for the same reasons as claim 8 from which it depends. The remarks pertaining to claim 8 in relation to the rejection over Wada et al. are incorporated by reference herein.

Claims 11-12 have been rejected over Wada et al. in view of Pattanaik. This rejection is believed overcome in view of the remarks pertaining to claim 8 from which claims 11 and 12 depend. Each of claims 11 and 12 recite particular structural features for the direct electrical connection bond recited in claim 8.

Claims 2 and 9 have been rejected over Wada et al. in view of Hayden et al. The remarks pertaining to Wada et al. in relation to claims 1 and 8 are incorporated by reference herein.

Claim 2 depends from claim 1 and adds the further limitation that the direct electrical connection be formed by an ultrasonic bond. Since Hayden et al. do not suggest or disclose the claimed adhesively suspended piezoelectric element, the combination of Wada et al. in view of Hayden et al. does not render claim 2 obvious.

Claim 9 depends from claim 8 and adds the further limitation that the direct electrical connection bond be an ultrasonic bond. Since Hayden et al. do not suggest or disclose the claimed direct bond to a adhesively suspended piezoelectric element, the combination of Wada et al. in view of Hayden et al. does not render claim 9 obvious.

Claim 10 has been rejected over Wada et al. Claim 10 depends from claim 8 and adds the limitation that the direct bond be an Au ball bond. Since Wada et al. fails to suggest or disclose all of the elements of claim 8, Wada et al. cannot render claim 10 obvious.

Claims 4 and 5 have been rejected over Wada et al. in view of Budde et al. and further in view of Pattanaik. Claims 4 and 5 depend from claim 1 and recite specific structures for the electrical connection recited in claim 1. Since none of these references suggest or disclose the claimed adhesively suspended piezoelectric element, the combination of these references cannot render claims 4 and 5 obvious.

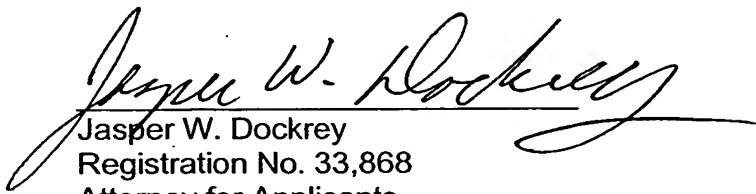
The applicants respectfully assert that the cited references do not render claims 1 and 8 obvious because one or more claim limitations are missing in the cited references. Accordingly, a *prima facie* case of obviousness has not been established. The applicants' dependent claims cannot be obvious in view of the cited references because the dependent claims narrow the scope of claims 1 and 8. The applicants respectfully assert that references which fail to establish *prima facie* obviousness of an independent claim cannot render associated dependent claims obvious.

#### **Additional Amendment of Claim 8**

Claim 8 has also been amended to delete inadvertently misplaced commas and to delete the word "to" appearing at line 12. These changes strictly address matters of form and do not alter the scope of claim 8 in any way whatsoever.

The applicants have made a novel and non-obvious contribution to the art of magnetic head actuator technology. The claims at issue are believed to distinguish over the cited references and to be in condition for allowance. Accordingly, such allowance is now earnestly requested.

Respectfully submitted,

  
Jasper W. Dockrey  
Registration No. 33,868  
Attorney for Applicants

BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, ILLINOIS 60610  
(312) 321-4200

## APPENDIX A

8. (amended) A magnetic head actuator having a finely movable tracking device[,] comprising:

a swing arm having a magnetic head at a free end and reciprocally movable around a coarse rotation axis at a base of a base of the swing arm;

a piezoelectric element [mounted in the swing arm] suspended between two sections of the swing arm by an adhesive, the piezoelectric element having a voltage-impressing electrode for allowing a fine arcuate movement of the free end around the coarse rotation axis when a voltage is applied; and

an FPC board having a resin base and a feeding line embedded in the resin base for feeding power to the voltage-impressing electrode,

wherein the feeding line resides completely within the FPC board except for an exposed portion [to] extending onto the voltage impressing electrode, and wherein the exposed portion is bonded to the piezoelectric element[,] by a direct electrical connection between the voltage-impressing electrode and the exposed portion.